A Physician's Viewpoint of Thoracic Surgery

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THIS paper consists of a review of modern thoracic surgery from the point of view of a physician. Few original observations will be made and it may be considered presumptuous for a physician to review the practice and progress of thoracic surgery. However, a close association with thoracic surgical units during the years of war and peace has been a constant reminder of the fact that the general physician, from lack of time and opportunity, is often necessarily out of touch with some of the viewpoints and activities of chest surgeons.

A physician's outlook will change and continue to change from the examination and interrogation of patients in a thoracic unit. More often than not one finds there has been undue delay in the patient coming under the care of a service which alone can provide the treatment necessary to restore health and activity. This is especially important when there is any possibility of carcinoma. There may be delay in the patient consulting his doctor. Possibly this will be remedied in some measure if a balance can be struck between regular medical examination of the population as a whole and the prevention of too much introspection. Often there is delay by the practitioner in referring his patient for X-ray or a specialist opinion. Often, too, there is delay in the physician referring him to the thoracic surgeon. The physician may ponder awhile, think deeply, perhaps, but procrastinate nevertheless. The recommendation may be to review the situation in a month, perhaps with a further X-ray, and again perhaps in a month; or equally disastrous, to defer another X-ray because symptoms and signs seem to be improving.

On the other hand, every thoracic unit would benefit by close co-operation with a physician interested in this branch of medicine. Otherwise there tends to be lack of balance and absence of that wider judgment in the assessment of individual patients which always comes from team work. Moreover, such co-operation might help to lower the reduceable mortality of certain major surgical procedures.

In this paper a broad field is covered because diseases of the œsophagus, cardia, and diaphragm are coming increasingly under the care of chest surgeons. This is as it should be, and an inevitable trend. All these conditions, as well as the surgery of the heart, are best dealt with by one who is thoroughly at home in the chest, skilled at bronchoscopy, and familiar with the complex problems of changing intra-pleural pressures associated with collapse, pneumothorax, and effusion. Moreover, if disasters are to be avoided, it is most important for the surgeon to have a specially-trained nursing staff and a resident surgical officer who can pass a bronchoscope at any time of day or night when there is need to combat the post-operative emergencies which inevitably, and not infrequently, occur.

All credit is due to the ear, nose, and throat surgeons for their part in introducing bronchoscopy and œsophagoscopy. However, no matter what degree of skill individuals have acquired, it is now inevitable that these procedures should largely pass into the hands of thoracic surgeons. They alone can have the requisite detailed knowledge of the bronchial tree and the applied anatomy of the thorax, and are acquainted with the problems associated with the subsequent operation on the respiratory or gastro-intestinal tract. Increased knowledge and maturity of judgment come from being able to follow patients through from their earliest symptoms until the opportunity arrives for the diagnosis to be confirmed or confounded by operation or autopsy. This surely will be largely conceded to-day. Again, and for much the same reasons, the radiologist is not in a position to make a diagnosis, and attempts to do so may be misleading or even disastrous. He can most usefully describe what he sees, and ensure technical perfection of films, but progress will chiefly depend on his becoming an active member of the thoracic team.

Bronchiectasis

Pathological changes in bronchiectasis are usually permanent, irreversible, and progressive. The time has come for physicians to review their attitude to treatment. The diagnosis should not only be established, but must be complete. Every patient should be assessed from the point of view of possible radical treatment. Admittedly, a more important problem is that of prevention. This can largely be achieved by better attention to the management of acute respiratory infections. It may well be that with the general use of penicillin and sulphonamides, the incidence of bronchiectasis will fall. Bronchopneumonia, following acute specific fevers, is a special source of danger. Collapse of lung, which occurs very easily in children, must be diagnosed early and treated vigorously. The dangers of "un-resolved" and "recurrent" pneumonia must be universally appreciated and a cause sought for every unexplained symptom, sign, or shadow. An empyema to-day may more often be related to some underlying condition, such as bronchiectasis, than to a primary pneumonia. Taking an over-all view, possibly as many as fifty per cent. of patients with bronchiectasis may be found suitable for surgical treatment, at least if under the age of forty years or so. Certainly, the disease may be too slight or too extensive, or there may be some complicating factor which makes the risk unreasonable, but there is no other cure for a condition which is often as distressing from the psychological as from the physical point of view. No adequate medical statistics can be consulted, largely because facilities for full investigation of potential cases are not even yet readily available outside the big centres. In the past, as commonly still to-day, more patients are seen in the out-patient department than in the wards. However, out-patient statistics are rarely available. In 1940, Perry and King studied and followed four hundred cases attending hospital. They found the age of onset was under ten years in 40 per cent. and under twenty years in 70 per cent.; that symptoms had been present for over five years in more than 50 per cent.; that within fifteen years 30-35 per cent. of the patients were dead; and that few who develop bronchiectasis before the age of

ten will live to be forty years of age. Others have published similar figures, though on rather small series.

Medical treatment may be improved with better care of the inevitable recurrent pulmonary infections, the use of penicillin by inhalation or injection, more attention to the details of postural drainage and improvement of general health. As with tuberculosis, economic status is often a factor of major importance. However, once considerable damage is done and symptoms are present, such measures are often disappointing.

Surgery, of course, should be as limited as possible. Resection of one or more lobes is usually carried out, but bronchiectasis tends to be segmental rather than lobar, and the aim of surgical treatment should be to remove all the involved segments without sacrificing any normal lung tissue. This is especially important when the disease is multi-lobular and the fact that segmental resection is technically possible is most encouraging. When necessary, it is often practicable and satisfactory to remove two of the four main lobes, together with the right middle lobe or lingula, if needs be. The younger the patient, the safer the operation, and operative deaths in children are now rare indeed and amount to no more than the occasional mishap which accompanies any surgical procedure. Clearly this means meticulously accurate pre-operative assessment, because all diseased segments must be removed. It is no longer reasonable to be satisfied with introducing some lipiodol into the lower lobes and taking a posterio-anterior view. All segments of all lobes must be delineated, if possible, even if several attempts are needed. This means that bronchography should only be undertaken by one thoroughly practised in the technique. The method chosen will depend on individual preference and experience. No thoracic surgeon will or should operate without seeing good bronchograms. Unless efficient films can be made with confidence by the physician or his staff, it may be wiser to leave the diagnosis of suspected cases to the chest unit in order to save repetition of the process for the patient.

This is not the place to discuss the problem of pathogenesis in any detail. Obstruction, infection, and collapse all play their part. Those especially interested should read Lisa and Rosenblatt's book, where the evidence is reviewed and stress laid on the importance of infection. It should be emphasised that it is damage to the lung parenchyma rather than the bronchi which matters most. The degree of dilatation per se is not so very important. Recurrent pulmonary infections are responsible for most of the symptoms and ill health and form the real basis of progression and a downward course. Abnormal physical signs are mainly due to changes in the lungs, such as exudation, collapse, emphysema, and fibrosis.

Bronchoscopy is probably advisable once in every case and especially if the disease is unilateral. Sometimes an unsuspected tumour or foreign body will be found, or possibly tuberculous granulation tissue or evidence of pressure from outside. Further information about the exudate may be obtained and prove helpful. It is a wise precaution always to have the sputum examined for tubercle bacilli, even though the presence of bronchiectasis has been demonstrated. Active tuberculosis is sometimes found in lobes removed for bronchiectasis, and these

cases tend to do badly and may, for example, develop tuberculous empyema. Lobectomy may still be the treatment of choice, but pre-operative recognition of its existence should demand streptomycin cover for the operation to reduce its risks.

Segmental resection has been well discussed by Bailey and by Overholt, and in the papers mentioned below various authors discuss their operative results in the the treatment of bronchiectasis. In children and young adults, resection of a single lobe is shown to be a remarkably safe procedure. Naturally, in older patients and where the disease is more extensive and where multiple resections are carried out, the risk is greater, but with properly selected cases, modern anæsthesia, and pre- and post-operative care, the death rate from operation seems generally to be less than five per cent. There must be many who would welcome the opportunity to be rid of so much unpleasantness and disability. The chances of cure are high.

Empyema

The treatment of empyema has been modified since the introduction of the sulphonamide drugs and penicillin. The present position has recently been reviewed by Barrett. Aspiration alone will seldom cure an empyema. Aspiration, together with sulphonamide therapy, may abort some cases in the formative stage, but these drugs are inactivated by pus and cannot cure an established empyema. Most empyemata are caused by organisms which are penicillin-sensitive. Penicillin remains active in pus, can be injected into the cavity, and when given by intramuscular or intravenous injection, diffuses into the empyema.

In North America, Brown and others claimed that fifty to sixty per cent. of cases due to pneumococci, hæmolytic streptococci, and staphlococci, but only twenty per cent. of mixed or putrid cases can be cured by aspiration and penicillin. Treatment in Great Britain on similar lines has not yet yielded comparable results and it is recommended that almost all cases should be treated by surgical drainage once pus is formed. Barrett considers that the chief uses of penicillin and repeated aspiration are to convert patients who are dangerously ill from a toxæmic condition to an improved state of general health, to reduce the risk of chronicity by minimising residual pleural thickening, to sterilise the pus and so allow early localisation and early drainage, to reduce the risk of cellulitis of the chest wall, and to reduce time spent in hospital. Brock has emphasised the importance of being careful about the definition of empyema, and considers that the confused thought and advice which has reappeared with the introduction of penicillin is based on failure to understand the pathology of pleural infection. This explains the differences of opinion expressed about treatment. Empyema is the end result of pus in the pleura, a mature abscess, the result of an acute suppurative process. The early formative stages should not be described as empyema any more than the early stages of acute cellulitis would be described as an abscess. No one doubts the value of penicillin, but it can only kill bacteria and the body resources are not always sufficient to cure the secondary mechanical effects of infection. This is why surgeons are still needed and the fundamentals of such treatment consist in proper

assessment of the correct time for drainage, provision of adequate drainage, institution of proper physical treatment, and estimation of the correct time to stop drainage. In an abscess elsewhere the walls usually fall together concentrically, but this must be avoided at all costs in empyema. The obliteration of the cavity should be achieved by expansion of the lung and not by falling in of the chest wall and displacement of the mediastinum and diaphragm. Hence the importance of physical treatment. This is also emphasised by Holmes Sellors. General exercises will improve general muscular tone and arm and shoulder movements prevent stiffness. Breathing exercises will prevent fixation of the ribs and diaphragm and ensure early and rapid expansion of the lungs. They are simple to carry out and cause little strain even to an ill patient immediately after operation. They must, however, be practised regularly throughout the day and not just when the masseuse comes. Unless there is some contra-indication on medical grounds, the patient should get up within a few days of operation.

Decortication of the lung may be required when gross pleural thickening has resulted, often from too long persistence with relatively conservative measures. In such cases simple drainage is not sufficient.

Lung Abscess

In a masterly series of articles, Brock has analysed his experience of more than four hundred cases of lung abscess seen over a period of twelve years. All interested are advised to read these papers. Even with the advent of penicillin lung abscess continues to be a potentially serious condition. This is not always realised, owing to the large number which respond to conservative measures. However, improvement is often only temporary, with serious or fatal consequences. He emphasises that lung abscess is not an entity, but a clinico-pathological state due to many conditions. A primary cause can be found in seventy-five per cent of cases.

Staphylococcal lung abscess is frequently primary in the lungs. The severe general infection suggests septicæmia or pyemia, and the X-ray shows characteristic multilobar consolidated areas with abscess cavities. Treatment should be conservative. Spontaneous pneumothorax may occur, especially in infants.

Foul sputum is by no means constant in lung abscess and in this series was present in fifty per cent. Fœtid and non-fœtid (ærobic) abscesses may be primary or secondary, segmental or non-segmental, and are only differentiated by the nature of the sputum. Most abscesses are, in fact, segmental, at least to begin with, and localisation is determined by posture and gravity. Localisation may, in fact, suggest the cause, e.g., in an obscure case an abscess in the middle lobe suggests enquiry for recent vomiting. Many similar examples could be quoted. Resolution largely depends on whether or not a slough is present. There is always considerable danger in the six weeks rule for medical treatment. Clinical improvement is not a sufficient guide; a persistent cavity is perilous and demands drainage. Initial improvement is frequently followed by exacerbations and remissions and the chronic stage should not be allowed to develop. Such an abscess will rarely

respond to external drainage and lobectomy or pneumonectomy is more satisfactory.

Ætiological factors naturally tend to vary with the age of the patient. In an infant or young child there is almost always a primary cause, e.g., staphylococcal pneumonia, tonsillectomy, cystic disease of the lung, or abscess secondary to bronchial obstruction due to pressure from caseous tuberculous glands. In young adults there may be a history of preceding dental extractions or tonsillectomy, upper or lower respiratory infections, such as tonsillitis, sinusitis, or bronchiectasis, or loss of consciousness from any cause with aspiration of infected material. Bronchoscopy may reveal a foreign body, benign stricture, or neoplasm.

In older patients gross dental sepsis is held to be responsible in about twenty per cent. and bronchial carcinoma must always be excluded. Otherwise a specific pneumonitis and the other causes mentioned above should be considered before concluding that the abscess is primary. The frequency of bronchial carcinoma warrants special mention, being the cause in fourteen per cent. of all cases, and thirty per cent. of those over forty-five years of age, in Brock's series.

In twenty-five per cent. of cases of lung abscess it will not be possible to find a cause. This is probably a measure of our ignorance. In passing, Brock reviews much of the literature. Clearly many cases are preventable and to-day many are presumably being prevented by early specific treatment of acute infections. Perhaps no surgeon will ever be able to report such a series again. The lessons, however, remain.

Recurrent and Chronic Spontaneous Pneumothorax

Much has been written on single attacks of benign pneumothorax and this problem was carefully studied and reported by Kjærgaard in 1932. Recurrent and chronic spontaneous pneumothorax is not so very uncommon, but has hardly received the attention it deserves. Brock, who has had an unusually large number of these patients referred for treatment, has recently analysed his experience in detail. Disability is usually considerable, but treatment is apt to be confined to conservative measures, often involving unnecessary restriction and periods of rest, when, in fact, cure can easily be ensured in most instances by active treatment. Moreover, there is always the danger of similar collapse of lung or of infection on the opposite healthy side. This condition is not an entity, but may be due to a number of different causes, the commonest being some form of emphysema, or else isolated bullæ due to old healed tuberculous scars in otherwise normal lung. Of great practical importance is the recognition of giant bullæ or cysts simulating pneumothorax, because here the correct treatment is excision or lobectomy. Otherwise the aim of treatment is pleurodesis, i.e., obliteration of the pleural space by some artificial means. Tomography may demonstrate small emphysematous bullæ or reveal unsuspected cystic disease. Bronchograms may reveal unsuspected bronchiectasis. In Brock's opinion, thoracoscopy is the most valuable and conclusive examination and should never be omitted. This is by no means the usual practice. By direct inspection of the pleura, the diagnosis can frequently be made at once and also the first step in treatment can be taken in suitable cases.

Pleurodesis has been achieved by injecting various irritating substances, such as talc, gomenol, etc., but Brock has found silver nitrate best and recommends the injection of 5-10 minims of a 10 per cent. solution into the pleural cavity, or direct application of a 20 per cent. solution to the area with a swab at thoracoscopy. The reaction may be painful and considerable and last a few days, and the injection may have to be repeated, but the treatment is usually successful and cure permanent.

Hawkins recently published two cases in which pleural synthesis was achieved by inserting a catheter into the pleural space and maintaining continuous suction. We had similar success in two patients who have since remained well for over eighteen months.

Carcinoma of the Lung

There is general agreement that the increased incidence of bronchial carcinoma is real and not merely apparent from better facilities for diagnosis. Although potentially curable, the death rate is still depressingly high and only a minority of patients are suitable for operation when first seen. Diagnosis is still not made sufficiently early. Since pneumonectomy is the only cure, there are few contra-indications to operation, except distant metastases and local spread to certain parts. It may not be possible to decide whether a particular growth is operable without thoracotomy. This is not a dangerous procedure as sometimes thought. The technique of pneumonectomy is now largely standardised, except for the tendency to become even more radical. It has been proved safe to open the pericardium and resect as much of it as is necessary to ensure removal of all the growth, regional glands, and associated connective tissue. The presence of Horner's syndrome or recurrent laryngeal nerve palsy almost always means the growth will be inoperable. A simple pleural effusion is not necessarily a contra-indication, but a hæmorrhagic effusion would mean certain recurrence. Hemiparesis of the diaphragm is no longer considered to be quite so serious, since the phrenic nerve may be involved where it lies on the pericardium, and hence can often be dealt with as indicated above. Rib involvement by direct spread is usually a contra-indication to thoracotomy, but occasionally, with peripheral tumours, the surgeon is able to resect part of the chest wall with the growth. An abnormal barium swallow is not necessarily a contra-indication. A filling defect, especially if smooth, may be due to a gland, malignant or not, but resectable, compressing, but not invading the œsophagus. Oesophagoscopy may help the surgeon to decide this point. Involvement of the brachial plexus precludes surgery.

Clearly we must concentrate on early diagnosis. This is chiefly the responsibility of the general practitioner and the general physician, to whom first the patient turns for advice. There are few, if any, pathognomic symptoms or signs of carcinoma of the lung which often masquerades as other simpler and more common conditions. Bronchoscopy should be requested more often and more readily than at present in the investigation of obscure chest symptoms or an unexplained X-ray shadow. It will enable a positive diagnosis to be made in some sixty to eighty per cent. of cases, and provide other useful information to the surgeon, especially if a biopsy can be made. Microscopical examination of the sputum, if properly carried

out, can be positive in about seventy per cent. of cases (and even more often if secretions obtained at bronchoscopy are examined). However, this does not remove the need for bronchoscopy. It must be emphasised that a negative bronchoscopy does not exclude carcinoma, and thoracotomy may be warranted to establish the diagnosis.

Bronchography is only required if the growth cannot be seen by bronchoscopy, e.g., if it is peripheral or perhaps in the upper lobe. Although of little value in the positive diagnosis of a growth, it does help to exclude primary bronchiectasis in doubtful cases.

A review of about four thousand cases, taken from the papers mentioned below, shows on the average :—

Operability Rate - - -	15—30—60 per cent.
Resectability Rate - - -	12—20—35 per cent.
Operative Mortality Rate - -	20—25 per cent.
Six-months Survival Rate - -	20—50 per cent.
Two-years Survival Rate - -	3—20 per cent.
Five-years Survival Rate - -	2—8 per cent.

The selection of cases varies so widely that it is quite impossible to deduce comparable statistics. Most of the figures are from surgical series, i.e., cases referred for an opinion and therefore presumably not obviously inoperable. The overall figures, i.e., unselected, would show fewer suitable for thoracotomy.

Arrythmias, following Pneumonectomy

Arrythmias after operation, especially if associated with tachycardia, may be a burden too great for the patient to tolerate even though the heart is otherwise healthy. Auricular fibrillation or flutter are the commonest forms. They should be treated promptly with intravenous digitalis, quinidine, or, as has been recently suggested, intravenous procaine. They are probably due to a combination of anoxæmia and vagal stimulation. It may be that there is a place for quinidine in prevention.

Cardiospasm

The treatment of cardiospasm is worthy of reconsideration, since more can be done for this troublesome complaint than the regular passage of bougies. Although some patients may get on reasonably well with this regime, others do not, and the condition often progresses and makes subsequent procedures more difficult. Wooller, from Leeds, has recently discussed the natural history of this disorder and its treatment. Screening with barium is important and informative. Great activity of the œsophagus trying to overcome the obstruction is seen, and this may continue for half an hour or more until it is empty. A hot drink often relaxes the cardia and empties the œsophagus quickly. In the next stage the œsophagus tires of its increased efforts and becomes dilated. This accounts for the progressive dysphagia. Oesophagoscopy may show inflammation with varying degrees of ulceration, and should always be carried out, because sometimes the diagnosis is at fault and there may be stenosis or, in later life, carcinoma. X-ray films may be misleading.

Von Mikulicz's operation of digital dilatation through the stomach gives results which are no better than the Negus hydrostatic dilator, which is a far simpler procedure. This is inserted over a stilet, preferably under direct vision, and the process can be repeated if necessary. Wooller reports good results in thirty-eight out of forty-seven cases. If this fails, something more radical is necessary. The operation which Heller introduced in 1913 is essentially similar to Rammstedt's operation for congenital pyloric stenosis, and is often satisfactory. In severe cases œsophago-gastrostomy may be necessary, but, naturally, there must be the risk of subsequent peptic ulceration of the œsophagus. Ochsner and De Bakey have devised various forms of cardio-plasty, and Sweet, of the Massachusetts General Hospital, favours making a longitudinal incision through all layers of the anterior wall of the cardia and closure in the opposite, or circumferential direction. These procedures seem rarely to be carried out in this country.

Diaphragmatic Hernia

Many papers on diaphragmatic hernia have been published, and serve to illustrate how rare diseases tend to become more common when their possibility is kept in mind. This is not the place to describe all the various forms of herniation through the diaphragm. It is now generally agreed that congenital short œsophagus with thoracic stomach is rare. In this instance there is no true hernia, because the stomach has never been below the diaphragm. The great majority of herniæ occur through the œsophageal hiatus. There may or may not be secondary shortening of the œsophagus, or the hernia may be paraœsophageal, in which case the œsophago-gastric junction remains below the diaphragm. All these various types give rise to similar, though rather complex, symptoms, which may suggest coronary disease, cardio-spasm, carcinoma, peptic ulcer, and other forms of dyspepsia. The commonest complaint is dysphagia. Symptoms are largely related to the amount of mechanical interference. Nausea, vomiting, belching, heartburn, and palpitation are frequent and usually progressive. Hæmorrhage occasionally occurs. Hiatus hernia has been well described as the masquerader of the upper abdomen. For these reasons, patients may be referred to a wide range of specialists for an opinion. The condition is much more likely to be demonstrated if the possibility is mentioned to the radiologist beforehand. It is important to identify the œsophago-gastric junction, which should be viewed from different angles. Actually, the right oblique is usually the best position. At operation it may be possible to stretch a shortened œsophagus, but it is impossible to determine radiologically whether the apparently shortened œsophagus is capable of being stretched or not; nor whether the œsophagus is inherently short or has become shortened. The barium stream is usually seen to be temporarily held up about the level of the diaphragm. Some degree of tortuosity, without dilatation, will be seen. In cases of doubt the patient should be examined lying down. Harrington examined the hiatus as a routine in one thousand consecutive abdominal operations. He found that in 55 per cent. of these cases the hiatus closely proximated the lower end of the œsophagus. In 35 per cent., one finger; in 8 per cent., two fingers; and

in 2 per cent, two to three fingers could be inserted between the œsophagus and the margins of the hiatus. Atrophy of the œsophago-gastric mucosa may result with age and produce a relative insufficiency of the hiatus. Most patients are over sixty years of age. Obesity and pregnancy may be predisposing factors by increasing intra-abdominal pressure.

The surgical treatment of diaphragmatic hernia has been particularly well described by Harrington. In a study of 320 cases he found an average of three previous erroneous diagnoses had been made.

Allison considers that the shortening, seen radiologically, is due to cicatricial contraction as a result of ulceration; Smithers, that it is due to spasm secondary to the inflammation; and Gilbert, that it is due to spasm from a vaso-vagal reflex. If due to a spasm, it would explain the discrepancy between the condition being so commonly seen by the radiologist, but rarely by the pathologist.

Peptic Ulceration of the Oesophagus

Interest in peptic ulceration of the œsophagus has revived with the development of a safe surgical approach to the cardia. It used to be thought that the œsophagus suffered acid digestion as the result of congenital shortening, with the fundus of the stomach above the diaphragm, and hence no barrier to the reflux of acid gastric juice. Peptic ulceration then leads to fibrosis and permanent shortening. Allison has discussed the matter fully and is convinced that short œsophagus is usually an acquired condition due to defects in the diaphragm, which allow a sliding hernia of the stomach. The œsophagus has no resistance to gastric juice, but is normally protected by the mechanism of the cardia. This mechanism is not fully understood, but is discussed in detail in this paper. Allison has studied seventy-four cases in Leeds. The sex incidence was equal and ninety per cent. of the patients were over fifty years of age (range, twenty-two to eighty years). Four stages can be observed in the natural history of the disease; œsophagitis, acute ulceration, chronic ulceration, and healed fibrous stenosis, though this last stage may never be reached. Dyspepsia in some form is present in seventy-five per cent. of the patients. It is usually described as a burning pain behind the sternum or high in the epigastrium. It may pass through to the back, between the shoulders, and be made worse by flexion of the spine. There is a varying relationship to food, but an attempt to analyse the types of dyspepsia is complicated by the frequent association of œsophageal ulcer with gastric or duodenal ulcer or gall bladder disease. Patients often complain of regurgitation of mucus, or food which is dependent on a patulous cardia. Dysphagia in varying degree occurred in ninety-two per cent. and was the symptom which brought most patients to the doctor. The radiological appearances have been fully described by Allison, Johnston, and Royce. Varying degrees of shortening, stenosis, and pouching may be seen, but an actual crater is relatively uncommon. Oesophagoscopy will demonstrate the inflammatory changes in the mucosa. The level of the œsophago-gastric junction must be identified. If there is stenosis, some mucus will be seen, but this is never gross, as in cardiospasm. If the œsophagus is shortened, no movement of the head may be required to pass the instrument into the stomach as is normally the case. The

rational treatment is to cure the deformity which allows acid to reach the œsophagus, and success largely depends on the œsophagus being elastic enough to reach below the diaphragm. The majority of patients do not have severe enough symptoms to justify operation and should be treated along medical lines with alkalis and a non-irritant diet. They should sleep propped up in bed to diminish the acid reflux during the night. Oesophagoscopic dilatation of strictures may be necessary and occasionally resection of the ulcerated and stenosed area with anastamosis to a loop of jejunum to exclude the stomach.

Carcinoma of the Oesophagus

The diagnosis of carcinoma of the œsophagus has always been particularly depressing. Pessimism over treatment has been based on late diagnosis of these very malignant growths and the fact that the condition is so often found to be incurable from local spread and early metastases. The general condition of the patient is usually poor and the operation itself is not a simple one. Oesophagoscopy has been too infrequently performed in the past, but should now be a routine diagnostic procedure in dysphagia. This would ensure earlier and more accurate diagnosis. During the past ten years the position has changed and interest rewakened because it has proved possible to resect the growth and restore continuity by direct œsophago-gastric anastamosis. The stomach is mobilised and drawn up into the thorax as high as needs be, and sometimes the anastamosis must be made above the arch of the aorta. The modern surgical approach to this problem has been well and thoroughly reviewed in a recent symposium from America and also by Mason and Sweet. Growths in the lower, mid-tharacic and cervical segments should be considered separately because the technical problems and risks vary considerably. To-day there is always the hope of cure, albeit, still a comparatively small one, and since the operation will relieve the most distressing symptom of dysphagia, the provision of relative comfort for a reasonable period, even two years or more, justifies a radical resection as a palliative measure alone. In cancer of the upper fourth or cervical segment it is not possible to perform a wide regional dissection and so the operation must often be purely palliative. Fortunately this site is relatively uncommon. In the middle half it is best to perform the anastamosis just below rather than above the aortic arch, if possible, because complications are fewer and the death rate lower. In the lower segment the technique is similar to that used for carcinoma of the cardia and a transthoracic partial gastrectomy and œsophagectomy, followed by intrathoracic œsophago-gastric anastamosis, are performed. The operative mortality is about twenty per cent. and the chances of five-year cure much the same as in bronchial carcinoma. A review of a number of papers shows, on the average :—

Operability Rate - - -	50—60 per cent.
Resectability Rate - -	30 per cent.
Operative Mortality Rate -	20 per cent.
Six-months Survival Rate - -	15—20 per cent.
Two-years Survival Rate - -	5—10 per cent.
Five-year Survival Rate - -	2— 5 per cent.

Lung Resection for Pulmonary Tuberculosis

The possibilities for surgery in pulmonary tuberculosis have recently been extended by the introduction of new methods. There may be a place for lobectomy or pneumonectomy in the treatment of severe cases. Little will be said on this subject because relative lack of personal experience naturally precludes a critical opinion. However, it may be of general interest to indicate the type of patient for whom such treatment is being recommended by various surgeons. These include failed pneumothorax for lower lobe cavities, failed thoracoplasty, bronchiectasis secondary to tuberculosis, severe bronchial stenosis, large, tension, or hilar cavities, and bronchopleural fistula, with mixed tuberculous empyema and destruction of the lung. The operative mortality would seem to be about twenty per cent., but in general these patients are those for whom little else can be done.

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REVIEWS

AIDS TO HYGIENE FOR NURSES. By Edith M. Funnell. Baillière, Tindall & Cox. 6s.

THE third edition of this book has recently been published and, though included in the Nurses' Aids Series, it contains quite enough information and explanation to be worthy of its secondary title, "A Complete Text-Book for the Nurse."

Parts of the book, e.g., tropical hygiene, are not required for the State Examination in Hygiene, but provide very essential information for the nurse.

The synopsis of the new Health Services Act is a valuable addition.

This book in the past has been first choice in most of the Northern Ireland training schools and is likely to continue at this level. K. H

CRITICAL STUDIES IN NEUROLOGY. By F. M. R. Walshe, M.D., F.R.S. Pp. 256. Edinburgh: E. & S. Livingstone Ltd. 15s.

THIS book contains reprints of six papers of the author—five appeared in Brain and the sixth in the British Medical Journal. They have been printed in this form in view of the requests for reprints, and also present critical studies of certain problems at a time when criticism is not conducive to popularity.

The first paper is entitled, "The Anatomy and Physiology of Cutaneous Sensibility." In this the time-honoured work by Head is carefully criticised, and at the end of the paper the reader feels he is bound to abandon the former theory of dual peripheral sensory mechanism and accept the theory of a physiological sensory unit. So in the second to the fifth articles on the motor cortex one seems forced to modify one's views on the origin of the pyramidal tract from Betz cells, and the mode of representation of movement in the motor cortex. One is asked to abandon the idea of "discrete movement" and accept the pyramidal tract as "the channel through which pass the impulse volleys by which willed movement is activated and continuously moulded by controlling cortical afferent patterns of excitation."

This book will have to be read and re-read by the post-graduate student or consultant, firstly, in order to assimilate the arguments set forth, and secondly, to try and assess their value and the possible finality of the observations made.

Dr. Walsh writes in his usual clear style and puts these very difficult subjects as simply as possible. There are a few well-chosen sketches, which enhance the text.

The book is on the whole well turned out, although some of the quotations, notes, etc., are in too small type. It is not a book for the medical student, but no neurologist should be without it if he has not read the original articles. H. H. S.